

CrN PRODUCT FAMILY

Chromium Nitride

CrN - A flexible multi-purpose solution

CrN is not quite as hard as many of the other coatings offered by the Tribology Centre, but it has a number of other advantages, which makes this group of coatings suitable for tools, wear parts and machinery components. The hardness of CrN is 3-6 times the hardness of hardened steel and twice as hard as a conventional hard chromium plating - and it does not require grinding after the coating process, as it is applied uniformly. CrN is a relatively ductile coating and therefore, the hardness of the base material is not critical.

Cutting and forming of metal

In the cutting and forming industry, CrN should be applied to prevent sticking of soft metals such as aluminium, copper and zinc alloys.

CrN-LT - Low temperature

The CrN coating can be produced at low temperature (approx. 150 °C) and the Tribology Centre has developed a special gentle process, which secures an unaffected quality of e.g. polished surfaces. CrN-LT facilitates good thermal conductivity, high wear resistance, excellent release on small series moulds made from easy-machined materials, as e.g. precipitation hardened aluminium alloys or various bronzes.

CrN-SD (Super Dense)

Through an optimization of the micro- and nano-structure of the chromium nitride crystals, we have developed a very dense coating, CrN-SD, where the crystals grow more densely compared to the traditional CrN coatings.

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The result is a harder and denser coating, which is very suitable for use in heavily loaded processes with adhesive metals.

CrN-HP (HiPIMS)

If a smooth and dense chromium nitride is desired, we recommend to use our new CrN-HP coating, which is a further development of the chromium nitride family based on the brand new HiPIMS technology. The coating is approx. 15% harder, making it suitable for particularly critical applications in corrosive environments or as a durable coating all without sacrificing the other good features known from the traditional chromium nitride coatings. CrN-HP is also available in a Super Slip version for use in high performance injection moulds.

Release coating for injection moulds

Release of plastic material from moulds is a difficult task. Due to the low polarity, CrN-SD and CrN-HP have superior release properties against a variety of plastic types.

CrN-SS (Super Slip)

To obtain optimal release in particularly difficult injection moulding processes, we have developed a new type of chromium nitride, CrN-SS, which has enhanced release properties against most difficult plastic types. CrN-SS further makes it possible to demould in a larger temperature range, which allows for an optimisation of the actual injection moulding process. This means improved cost effectiveness through reduced cycle times and waste. In particularly demanding processes it may be advantageous to use CrN-HP Super Slip.

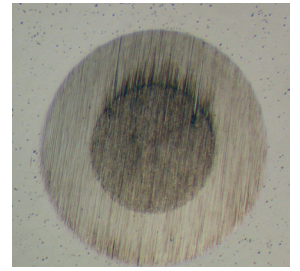


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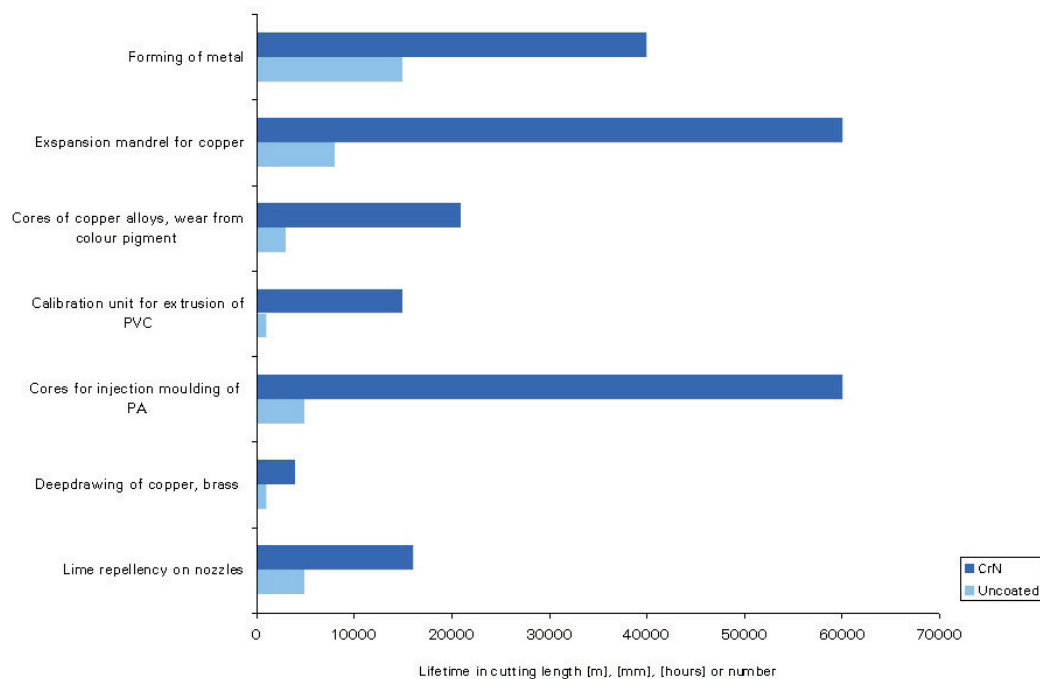
Chromium Nitride

Colour: Silver grey



PRODUCT VARIATIONS	CrN-LT	CrN-SS	CrN-SD	CrN-HP
Micro hardness [HV]	1800	1800	1800	2100
Process temperature [°C]	150	180	180-450	180
Application temperature, max. [°C]	700	300	700	700
Friction coefficient against steel	0.5	0.5	0,3	0,3
Processing method	PVD	PVD + II	PVD	HiPIMS
Coating type	Single layer	FGC	Single layer	Single layer
Standard layer thickness [µm]	3 - approx. 40	1-3	1 - approx. 40	5

Examples of increased tool life with CrN



For clarity reasons, specific operation details are not included. The figure is based on actual operation data received from our customers. The chart is to be considered only as an illustration of the increased functionality achieved when using the CrN coatings.

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